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0. Introduction

This paper investigates the semantics of the various kind-referring expressions and generic sentences in Brazilian Portuguese (BP). In Brazilian Portuguese genericity may be expressed by both definite singular and definite plural nominals, and also by the indefinite generic, the bare singular and the bare plural.[1] The main goal of the paper is to address the differences in the interpretations of the generic expressions in BP in light of current theories.

The paper argues that the most economic explanation for the expression of genericity in Brazilian Portuguese emerges if one takes the denotation of common nouns as a neutralization between plural and singular denotations as proposed by Chierchia 1998 for mass nouns. Common nouns in BP then are best analyzed as denoting both atomic and plural individuals. The Noun Phrase denotation may be specified for number when under the scope of a SINGular or a Plural operator. The different interpretations of the indefinite generic, the bare singular and the bare plural are attributed to the semantics of a SINGular and of a PLural operator plus the semantics of generically quantified sentences. The interpretation of the generic definite nominals is explained by the interaction of a generic definite article with the denotations of the noun phrase to which the SING or PL operators have applied.

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[1] Throughout this paper I use the terms 'nominal' and 'nominal expression' when I wish to remain neutral to the debate of whether the nominal constituent is a Determiner Phrase or a Noun Phrase.

UMOP 23: Issues in Semantics, Kiyomi Kuusmoto and Elisabeth Villalta (eds.), 137-154.

The outline of the paper is as follows. In section 1, I present the descriptive facts on the expression of genericity in BP in light of the view that natural languages make use of two different devices to express genericity: kind-referring expressions and generic quantification. In section 2, I propose a denotation for common nouns in Brazilian Portuguese, and an interpretation for both a singular and a plural operator which I claim to exist in that language. In section 3, I apply the proposed framework to the derivation of the logical forms for BP quantified generic sentences with indefinites. In section 4, definite kind-referring expressions are analyzed. The existence of a 'generic' definite article is proposed. Finally, a summary of what has been achieved is presented.

1. Setting the Scene

In this section I will consider in detail the behavior of generic arguments in Brazilian Portuguese. The background assumption will be that natural languages make use of two different devices to express genericity: kind-referring expressions and generic quantification (c.f. Krifka et *al.* 1995).

Apparently all kinds of nominal expressions may be used to express genericity in Brazilian Portuguese: the definite singular (1) and the definite plural (2), the indefinite generic[2] (3) and both the bare singular (4) and the bare plural (5).

(1) O automovel chegou ao Brasil em 1990.
The-sg automobile arrived in-the Brasil in 1990
'The automobile arrived in Brazil in 1990'

(2) As cobras são animais perigosos.
The-pl snakes are animals dangerous
'Snakes are dangerous animals'

(3) Um brasileiro gosta-de arroz e feijão.
A Brazilian likes-of rice and bean
'A Brazilian likes rice and beans'

(4) Homem não chora.
Man not cries
'Men don't cry'

(5) Professores trabalham muito.[3]
Teachers work much
'Teachers work a lot'

[2] I use the term indefinite generic, following Heim 1982, to refer to a DP headed by a singular indefinite article with a generic interpretation.

[3] The bare plural does not seem to be very productive in BP. This may be related to the fact that a great number of regional and social dialects of BP are going through a loss of the plural marking on the whole N' constituent.

Recent literature on generics (see papers in Carlson & Pelletier 1995) highlights the existence of two distinct phenomena: (i) *generic noun phrases* or *kind-referring expressions* - expressions that denote kinds such as the Determiner Phrase (DP) *o automóvel* ('the automobile') in (1), and (ii) *quantified generic sentences or characterizing sentences* - sentences that report lawlike regularities, such as sentences (2)-(5). Kind-referring expressions are taken to behave as proper names of kinds and only certain types of phrases are able to perform this role - most typically, the definite singular DP. Characterizing sentences, on the other hand, are generalizations over events, facts or individuals.

Krifka *et al.* 1995 and Gestner & Krifka 1993 propose a number of diagnostic tests and describe some typical properties that distinguish sentences with kind-referring nominal expressions from generically quantified/characteristic sentences. I will make use of some of these properties in a first attempt to make some descriptive generalizations on the expression genericity in Brazilian Portuguese.

(i) There are some predicates with argument places that can only be filled by kind-referring expressions. Sentences (6) and (7) show that both the singular and the plural definite Determiner Phrases seem to be able to denote kinds. This is not true for the indefinite noun phrase (8) - except for its taxonomic reading (11) - the bare singular (9) and the bare plural (10).[4]

(6) O mico-leão-dourado[5] logo estará extinto.
The-sg monkey-lion-golden soon will-be extinct
'The golden lion monkey will soon be extinct'

(7) Os micos-leões-dourados logo estarão extintos.
The-pl monkeyS-lionS-goldenS soon will-be extinct
'The golden lion monkey will soon be extinct'

(8) *Um mico-leão-dourado logo estará extinto.
A monkey-lion-golden soon will-be extinct

(9) *Mico-leão-dourado logo estará extinto.
Monkey-lion-golden soon will-be extinct

(10) ?*Micos-leões-dourados logo estarão extintos.[6]
MonkeyS-lionS-goldenS soon will-be extinct

[4] In these examples, and in the rest of the paper, the asterisk and the question mark express judgements for the generic non-taxonomic reading of the NPs and not for its other possible readings which may very well be available. The taxonomic reading won't be discussed in this paper.
[5] The 'mico-leão-dourado' is a kind of monkey that has a golden mane.
[6] Both (9) and (10) improve their acceptability if the subject is given a contrastive stress. The role of stress and focus will not be discussed in this paper.

(11) Um (certo) macaco - o mico-leão-dourado - estará logo extinto.
A (certain) monkey - the monkey-lion-golden - will-be soon extinct
'A (certain) monkey - the golden lion monkey - will soon be extinct'

In object position only the singular definite noun phrase (12) is able to denote a kind. Sentences with the other types of nominals do not seem able to denote kinds ((13)-(16)). It is important to note that many other readings are possible for these sentences, besides the 'generic reading' which would be equivalent to the interpretation of (12).The definite plural in (13), has a perfectly good interpretation if we take Graham Bell to have invented two or more kinds of telephones. A reading that means 'a kind of telephone' or 'a type of telephone' is also always available for the indefinite generic in (14) - it is the so-called *taxonomic reading*. And a specific reading is always available for the indefinite DP in (14). Iterative readings are available for the bare singular (15) and for the bare plural (16) as in (17).[7]

(12) Graham Bell inventou o telefone.
Graham Bell invented the-sg telephone
'Graham Bell invented the telephone'

(13) *Graham Bell inventou os telefones.
Graham Bell invented the-pl telephones
'Graham Bell invented the telephones'

(14) *Graham Bell inventou um telefone.
Graham Bell invented a telephone

(15) *Graham Bell inventou telefone.
Graham Bell invented telephone

(16) *Graham Bell inventou telefones.
Graham Bell invented telephones

(17) Quando ele trabalhava para a Sprint seu serviço era inventar telefone(s)
When he worked for the Sprint his job was to-invent telephone(s)
'When he worked for Sprint, his job was to invent telephones'

(ii) Generic sentences are stative. Consequently, a sentence with an episodic predicate will only be able to express some kind of genericity if one of its arguments is a kind-referring expression. The pattern we get with this 'test' is similar to the one in (6)-(11): the singular and plural definite DPs seem possible as kind-referring expressions ((18) and (19)), whereas the indefinite generic (20), the bare singular (21) and the bare plural (22) do not seem to be able to denote kinds.

[7] All these different possible readings create difficulties with getting judgements. It is also true that in some cases the decision on what kind of reading one gets may be partly theory-dependent. (I owe this point to B. Partee, *p.c.*)

(18) O automóvel chegou ao Brasil no século XX.
The automobile arrived in-the Brazil in-the century XX
'The automobile arrived in Brazil in the 20th century'

(19) Os automóveis chegaram ao Brasil no século XX.
The-pl automobiles arrived in-the Brazil in-the century XX
'The automobiles arrived in Brazil in the 20th century'

(20) *Um automóvel chegou ao Brasil no século XX.
An automobile arrived in-the Brazil in-the century XX

(21) *Automóvel chegou ao Brazil no século XX. [8]
Automobile arrived in-the Brazil in-the century XX

(22) *Automóveis chegaram ao Brasil no século XX.
Automobiles arrived in-the Brazil in-the century XX

(iii) Some generic noun phrases sound weird when made out of not well-established kinds. Again, definite DPs (both singular and plural) behave as kind-denoting phrases ((23) and (24)) - the change from a well-established kind to a non-established one makes the sentence very unnatural. The indefinite singular (25), the bare singular (26) and the bare plural (27) are indifferent to this change. This means that in these cases we probably have generic sentences instead of kind referring nominal expressions.

(23) a. A garrafa de Coca tem gargalo estreito.
The bottle of Coke has neck narrow
'The Coke bottle has a narrow neck'

b. ?? A garrafa verde tem gargalo estreito[9].
The bottle green has neck narrow
'The green bottle has a narrow neck'

(24) a. As garrafas de Coca tem gargalo estreito.
The-pl bottles of Coke have neck narrow
'The Coke bottles have a narrow neck'

b. ? As garrafas verdes têm gargalo estreito.
The-pl bottles greenS have neck narrow
'The green bottles have narrow necks'

[8] Again the bare plural and the bare singular become more acceptable if they are given a contrastive stress.
[9] This sentence is from Carlson (1977) who attributes it to Barbara Partee.

(25) a. Uma garrafa de Coca tem gargalo estreito.
A bottle of Coke has neck narrow
'A Coke bottle has a narrow neck'

b. Uma garrafa verde tem gargalo estreito.
A bottle green has neck narrow
'A green bottle has a narrow neck'

(26) a. Garrafa de Coca tem gargalo estreito.
Bottle of Coke has neck narrow

b. Garrafa verde tem gargalo estreito
Bottle green has neck narrow

(27) a. Garrafas de Coca têm gargalo estreito.
Bottles of Coke have neck narrow

b. Garrafas verdes têm gargalo estreito
Bottles greenS have neck narrow

We may now state some tentative conclusions about generic expressions in BP:

- The definite generic is a kind-referring expression in Brazilian Portuguese;
- The indefinite generic, the bare singular and the bare plural do not seem to be able to denote kinds. Their genericity must stem from their participating in generically quantified sentences.

Many pending issues remain though. For one thing, the behavior of the plural definite generic is not clear as far as its ability to denote kinds. Compare (7) to (13) (repeated below). Another issue we must face is whether there are any differences among the interpretation of generic sentences with the three types of generic nominals (the indefinite generic, the bare singular and the bare plural), and, if so, what they should be attributed to.

(7) Os micos-leões-dourados logo estarão extintos.
The-pl monkeyS-lionS-goldenS soon will-be extinct
'The golden lion monkey will soon be extinct'

(13) *Graham Bell inventou os telefones.
Graham Bell invented the-pl telephones
'Graham Bell invented the telephones'

The issues just raised will be addressed in the remainder of this paper. It will turn out that a simple solution for the behavior of genericity in BP emerges if we assume that common nouns are neutralized for semantic number. In the next section, I will spell out a proposal for the interpretation of common nouns in Brazilian Portuguese.

2. The Interpretation of Common Nouns and of the Plural and Singular Morphemes in Brazilian Portuguese

Common Nouns are usually interpreted as predicates denoting a set of atomic entities. Nevertheless, as far the explanation of the facts raised in session 1 is concerned, the simplest picture that comes to mind is to take the denotation of a singular common noun in Brazilian Portuguese as a neutralization between singular and plural. A common noun like *bolacha* ('cookie'), for example, would have as its denotation all atomic cookies and all sums of any number of cookies. In a universe with just three cookies, the denotation of *bolacha* would be as in (1). This is similar to the denotation Chierchia 1998 proposes for mass nouns and also to Link's 1983 denotation for plural predicates (*P).

(1) [[bolacha]] = $\left|\begin{array}{ccc} & a\oplus b\oplus c & \\ a\oplus c & a\oplus b & b\oplus c \\ b & a & c \end{array}\right|$

Brazilian Portuguese has number morphology though. In standard BP number marking in nominals is as in (2), where both the head noun and the determiner get inflected.[10] In nonstandard dialects the pattern is as in (3), and only the determiner gets inflected. Since this morphology seems to have semantic meaning, it makes sense to think of the number morpheme as an operator on the head noun[11] as in (4) and (5), where **AT**(omic) is a predicate that is true of all atomic entities (c.f. Link 1983). To make things more concrete, I apply these operators to the common noun *bolacha* in (6) and (7).

(2) a. a bolacha
the-fem-SING cookie

b. as bolachas
the-fem-PL cookieS

(3) a. a bolacha
the-fem-SING cookie

b. as bolach
the-fem-PL cookie

[10] Actually, in standard BP, almost all lexical items inside a DP get marked for number as in (i).
(i) oS meuS velhoS amigoS americanoS
TheS myS oldS friendS AmericanS
'My old American friends'

[11] Possibly the number operator has scope over the whole N' phrase or DP, but I will disregard the important issue of whether number es a syntactic or a semantic feature or both. (Thanks to Barbara Partee *p.c.* for calling my attention tothis issue.

(4) SING(ular) = $\lambda P\ \lambda x[P(x) \wedge \mathbf{At}(x)]$

(5) PL(ural) = $\lambda P\ \lambda x[P(x) \wedge \neg \mathbf{At}(x)]$

(6) SING **(bolacha)** = $\lambda P\ \lambda x[P(x) \wedge \mathbf{At}(x)]$ **(bolacha)**
= λx **[bolacha** $(x) \wedge \mathbf{At}(x)]$

(7) PL **(bolacha)** = $\lambda P\ \lambda x[P(x) \wedge \neg \mathbf{At}(x)]$ **(bolacha)**
= λx **[bolacha** $(x) \wedge \neg \mathbf{At}(x)]$

The result of applying the PL(ural) operator to a common noun is illustrated in (8). What we get is the denotation of a common noun stripped of its atomic individuals. When we apply the SING(ular) operator to a common noun, we get the set of atomic individuals in the denotation of the common noun, as is illustrated in (9).

(8) $[[\mathbf{bolacha}_{PL}]]$= | a⊕b⊕c | a⊕b a⊕c b⊕c |

(9) $[[\mathbf{bolacha}_{SG}]]$ = | a b c |

An argument in favor of the present view of the denotation of common nouns in BP is one of economy. The structure revealed by the denotation of the common noun should suffice to account for its different interpretations as far as number is concerned. Another argument in favor of this proposal is that the denotation of common nouns can be seen as homogeneous throughout different languages and their differences could be be seen as caused by the application of different kinds of operators.

It is now time to address the question of the differences among the generic interpretations of the three types of indefinite expressions in BP. The next session outlines an analysis of BP indefinite generic expressions in view of the analysis of characteristic sentences as sentences under the scope of a GEN(eric) operator.

3. Indefinites Participating in Characterizing Sentences: an Analysis of the Indefinite Generic, the Bare Singular and the Bare Plural in Brazilian Portuguese

In this section I will explore the ways in which Brazilian Portuguese expresses generic quantification in view of the proposal that common nouns may be considered as unmarked for number in this language.

Generic indefinites such as as the ones in (1)-(3) are indefinite nominal expressions that seem to refer to the whole set of entities or to the kind denoted by their head noun.

They do not refer to any particular entity and are not bound by an existential quantifier as the Russellian analysis for the indefinite article would predict.

(1) Um brasileiro dança bem.
A Brazilian dances well

(2) Brasileiro dança bem.
Brazilian dances well
'Brazilians dance well'

(3) Brasileiros dançam bem.
Brazilians dance well
'Brazilians dance well'

As mentioned before, most recent work on generics suggests that 'generic' indefinites are not real kind-refering expressions because they are not able to denote kinds. First, they only occur in generically quantified sentences (compare (4) to (5)). Second, they cannot be used with predicates that apply only to kinds (compare (6) to (7)). Finally, they cannot be used with non-stative predicates (compare (8) to (9)).

(4) The potato was first cultivated in South America[12].

(5) *A potato was first cultivated in South America[13].

(6) Graham Bell invented the telephone.

(7) *Graham Bell invented a telephone.

(8) The rat was reaching Australia in 1970.

(9) *A rat was reaching Australia in 1970.

Heim 1982 proposes that indefinite nominals may be analyzed as predicates containing a free variable which winds up bound either by a covert or by an overt operator. Heim 1982 was also the first to suggest that a sentence with a 'generic' indefinite might be analyzed as parallel to conditional sentences, so that sentence (10b) would be a close paraphrase of sentence (10a). 'Generic' indefinites then can be viewed as 'normal' indefinite expressions used in generic sentences. Therefore their semantics is going to be whatever the semantics of indefinite expressions is plus the semantics for generic/characterizing sentences.

[12] Sentences (4)-(9) are from Krifka *et alii* 1995.

[13] The asterisk, as before, indicates semantic and not syntactic ill-formedness. Actually, it only means that these sentences cannot be interpreted as straightforward generics equivalent to (4), (6) and (8). They could be understood as generics under the 'shifted' reading "one kind of potato".

(10) a. A Brazilian dances well
b. (Always/necessarily) if someone is a Brazilian, he dances well.

Inspired on Heim's suggestion much of the work on generics (e.g. the papers in Carlson & Pelletier 1995) adopt an analysis of characterizing sentences as sentences containing an unrealized relational generic operator (**GEN**) that takes a **restrictor** and a **matrix** as its arguments. This operator is presented in (11), where the variables before the semi-colon are the ones that get bound by **GEN** and the variables after the semi-colon are the ones that get existentially bound within the matrix. Variables within {} may or may not appear in the matrix.

(11) **GEN** $[x_1,\ldots, x_i; y_1,\ldots, y_i]$ (**Restrictor** $[x_1,\ldots, x_i]$; **Matrix** [$\{x_1\},\ldots, \{x_i\}, y_1,\ldots y_i$])
= **GEN** $[x_1,\ldots, x_i;]$ (**Restrictor** $[x_1,\ldots, x_i]$; $\exists y_1,\ldots, y_i$ **Matrix** [$\{x_1\},\ldots, \{x_i\}$, $y_1,\ldots y_i$])

If the indefinite singular, the bare singular and the bare plural are all 'normal' heimnian indefinites in Brazilian Portuguese, they get their generic meaning from the fact that they are participating on characteristic sentences where their variable gets bound by the **GEN**(eric) operator. This being the case, the logical form of the sentences in (1)-(3) should be the ones in (12)-(14).

(12) a. A Brazilian dances well ('A Brazilian dances well')
b. **GEN** [x;] (x **is a Brazilian**; x **dances well**)

(13) a. Brasileiro dança bem ('Brazilian dances well')
b. **GEN**[x;] (x **is Brazilian**; x **dances well**)

(14) a. Brasileiros dançam bem ('Brazilians dance well')
b. **GEN**[x;] (x **are Brazilians**; x **dances well**)

Now the question arises of what the differences are among the interpretations of (12)-(14) and how the three generic interpretations of the indefinite expressions relate to one another. For one thing, the three forms are different as far as their semantic number is concerned. That shows up when the indefinite is in an object position. The indefinite singular in object position is singular (15), the bare singular is unspecified for semantic number (16), and the bare plural is semantically plural (17).

(15) Unicórnio tem <u>um chifre</u>.
unicorn has a horn
'Unicorns have a/one horn'

(16) Unicórnio tem <u>chifre</u>.
unicorn has horn
'Unicorns have (an unspecified number of) horns'

(17) Unicórnio tem chifres.
unicorn has horns
'Unicorns have (more then one) horns'

Actually, the interesting thing about these constructions is that all types of indefinite subjects go with all types of indefinite objects as is also shown in (18) and (19). The effect of number is as above so that for the indefinite singular ('a horn') each unicorn has one horn, for the bare singular, each unicorn has a unspecified number of horns and for the bare plural, each unicorn has more than one horn. I will not consider them at this point.[14] The data in (15)-(19) shows that this is not just a syntactic phenomenon related to agreement.[15]

(18) Um unicórnio tem um chifre/chifre/chifres.
A unicorn has a horn/ horn / horns

(19) Unicórnios têm um chifre/chifre/chifres.
Unicorns have a horn/ horn / horns

The same is true of habitual sentences like (20)-(22). As far as my intuition goes, (20) would be false or at least not felicitous if in most after-dinner situations Jorge had more (or less) than one cookie. And (21) comes out true if Jorge usually has one or more cookies after dinner. As for (22), it would be false if Jorge usually had one or less cookies after dinner. Of course, as most generic sentences, these allow for exceptions. So that if Jorge had more or less than one cookie on occasional situations, (20) would still count as true. The same holds for (22). If once in a while Jorge had no cookies or if he had just one cookie after dinner instead of his usual two or three, the sentence would still count as true. The corresponding logical forms of sentences (20a)-(22a) are represented in (20b)-(22b) (c.f. Krifka *et al.* 1995).

(20) a. Depois do jantar, Jorge come uma bolacha. (one cookie)
After of-the dinner, Jorge eats a cookie
'After dinner, Jorge has a cookie'

b. **GEN**[s;x] (Jorge **in** s $\wedge$ **after dinner** s; **a cookie** (x) $\wedge$ Jorge **eats** x **in** s)
= **GEN**[s;] (Jorge **in** s $\wedge$ **after dinner** s; $\exists$x (**a cookie** (x) $\wedge$ Jorge **eats** x **in** s))

(21) a. Depois do jantar, Jorge come bolacha. (one or more cookies)
After of-the dinner, Jorge eats cookie
'After dinner, Jorge has cookies'

b. **GEN**[s;x] (Jorge **in** s $\wedge$ **after dinner** s; **cookie** (x) $\wedge$ Jorge **eats** x **in** s) =
GEN[s;] (Jorge **in** s $\wedge$ **after dinner** s; $\exists$x (**cookie** (x) $\wedge$ Jorge **eats** x **in** s))

[14] Of course, collective readings are possible with both the bare singular and the bare plural.
[15] This data seems to show that Brazilian Portuguese does not have dependent plurals.

(22) a. Depois do jantar, Jorge come bolachas. (more than one cookie)
After of-the dinner, Jorge eats cookies
'After dinner, Jorge has cookies'

b. **GEN**[s;x] (Jorge **in** s ∧ **after dinner** s; **cookies** (x) ∧ Jorge **eats** x **in** s) =
GEN[s;] (Jorge **in** s ∧ **after dinner** s; ∃x (**cookies** (x) ∧ Jorge **eats** x **in** s))[16]

Some other arguments for the bare singular being taken as non-quantized come from Schmitt and Munn 1999. According to them, evidence for lack of number in bare singulars comes mainly from aspectual interpretations of sentences. They point out that properties of the direct object are known to affect the Verb Phrase aspect so that *quantized objects* trigger *terminative readings* in verbs like *write*, while *non-quantized objects* trigger *durative readings*. Interestingly, bare singulars allow only for durative readings.

The behavior of the bare singular and of the bare plural in the two sentences ((23) and (24)) is evidence for their being non-quantized. Both denotations are unspecified for the cardinal number of each entity that belong to it, but the denotation of the bare plural excludes atomic entities. The adverbial phrase *for two hours* forces a durative reading on (23) and the sentence comes out good. On the other hand, the same sentence with the terminative adverbial phrase as *in two hours* becomes extremely awkward (24).

(23) Eu escrevi carta/cartas por duas horas (an unspecified number of letters)
I wrote letter/letters for two hours

(24) *Eu escrevi carta/cartas em duas horas[17]
I wrote letter/letters in two hours

Another evidence presented by Schmitt & Munn 1999 is that in the licensing of binomial *each* the bare singular patterns as semantically unspecified for number. The grammaticality of the sentence with the indefinite DP (25a) as opposed to the agrammaticality of the sentence with the bare singular (23b) shows that bare singulars do not have a cardinal number.

(25) a. Os países da UE mandaram um delegado cada
The countries of-the UE sent a delegate each

b. * Os países da UE mandaram delegado/delegados cada
The countries of-the UE sent delegate/delegates each

[16] The logical forms in (20) and (21) yield the same truth conditions for both the sentences with the indefinite generic and the bare singular. This seems to be a well known problem concerning cardinals and the issue is whether the differences in interpretation should be left for pragmatics.

[17] This sentence becomes acceptable if it receives some kind of iterative reading, as the following: *Eu estava tão ocupada naquela época que eu preparava aula em uma hora* ('I was so busy then that I used to prepare class in one hour').

I will now relate the interpretations of the three different indefinite expressions to one another by going back to the interpretation of common nouns, and to the singular and plural operators proposed in section 2. I assume then that the basic common noun has a denotation which is neutral between singular and plural as illustrated in (1) of section 2. In other words, the denotation of a common noun contains all atomic individuals and all the plural individuals of which that predicate may be said true of.

Let's start with the habitual sentences in (20)-(22). The denotation of the common noun *bolacha* ('cookie') is as in (26) below. The composition of the meaning of the indefinite generic with the SING(ular) operator is shown in (27). I will assume a heimnian indefinite article that does not affect the truth conditons of the sentence. The article is obligatorily specified for number though, and is higher in the syntactic structure than the number operator. This means that whenever we have an article, the number operator has applied to the nominal constituent (possibly N') under its scope. Consequently the logical form of *uma bolacha* ('a cookie') is as in (28) which is exactly like (27). If we substitute (28) for *uma bolacha* in the logical form for (20b) we get the logical form in (29b).

(26) [[bolacha]] =

	a⊕b⊕c	
	a⊕c	
a⊕b		b⊕c
a	b	c

(27) (SING (**bolacha**))
= (λP λx[P(x) ∧ **At**(x)] (**bolacha**))
= λx [**bolacha** (x) ∧ **At**(x)]

(28) *uma bolacha* = λx [**bolacha** (x) ∧ **At**(x)]

(29) a. Depois do jantar, Jorge come **uma bolacha**.
b. **GEN**[s;] (Jorge **in** s ∧ **after dinner** s; ∃x (λ x [**bolacha** (y) ∧ **At**(y)] (x) ∧ Jorge **eats** x **in** s))
= **GEN**[s;](Jorge **in** s ∧ **after dinner** s; ∃x(**bolacha** (x) ∧ **At**(x) ∧ Jorge **eats** x **in** s))

The interpretation of a bare plural expression is built from the application of the PLural operator to the common noun as was shown in (7) of section 2 and is now repeated in (30). So that the logical form of the habitual sentence with the bare plural becomes (31). This seems to be the correct result for the interpretation that Jorge usually eats more than one cookie after dinner.

(30) PL (**bolacha**) = λPλ x[P(x) ∧ ¬**At**(x)] (**bolacha**)
= λ x [**bolacha** (x) ∧ ¬**At**(x)]

(31) a. Depois do jantar, Jorge come **bolachas**. (more than one cookie)
b. **GEN**[s;] (Jorge **in** s ∧ **after dinner** s; ∃x (λ x [**bolacha** (y) ∧ ¬**At**(y)] (x) ∧ Jorge **eats** x **in** s))
= **GEN**[s;] (Jorge **in** s ∧ **after dinner** s; ∃x (**bolacha** (y) ∧ ¬**At**(y)∧ Jorge **eats** x **in** s))

In the next section I turn to the investigation of kind-referring expressions in BP and of their relation to the interpretations proposed to the common noun and to the singular and plural operators.

4. Kind-Referring Expressions in Brazilian Portuguese

In section 2 we have seen how generic quantification is expressed in BP. Now I turn to expressions that in themselves refer to a whole kind. In section 1 we concluded that the typical kind-referring expression in BP is the definite generic. In BP both the singular and the plural definite Determiner Phrases seem possible as kind-referring expressions . This section addresses the issue of how the common noun denotation, the PL(ural) and the SING(ular) operators and the definite article compose to yield a kind interpretation in BP.

The distinction between generic sentences and kind-referring expressions tells us that there are two ways in which natural languages express genericity. Sentences (1) and (2) illustrate the two ways of expressing genericity. Although both sentences are extremely close in meaning, their respective interpretations result from two distinct processes. Sentence (1) says that "Usually, if someone is Brazilian, he dances well". Sentence (2) says of the kind 'Brazilians' that it has the property of dancing well.

(1) Um brasileiro dança bem
A Brazilian dances well

(2) O brasileiro dança bem
The Brazilian dances well

The expression of genericity in the case of kind-referring expressions is a property of the Determiner Phrase, not of the sentence. This becomes evident from the fact that kind-referring DPs are able to co-occur with any kind of predicate, from kind predicates (3) to both individual (4) and stage-level (5) predicates.

(3) O mico-leão-dourado logo estará extinto.
The monkey-lion-golden soon will-be extinct
'The golden lion monkey will soon be extinct'

(4) O mico-leão-dourado é inteligente.
The monkey-lion-golden is intelligent
'The golden lion monkey is intelligent'

(5) O brasileiro está fumando muito
The Brazilian is smoking a lot
Brazilians are somoking a lot

4.1. The definite article as a definite generic article

I will now turn to what happens when a common noun combines with the definite article to yield a kind-referring expression. In this session, I explore a simple solution for kind-denoting expressions. The idea is to claim the existence of a 'generic' definite article, which picks out the unique kind to which all realizations of a predicate belong.

As Krifka *et al.* 1995 put it "... kinds are (a certaint type of) individual entities, and kind-referring NPs consequently should be NPs which refer to these entities." Kind-referring expressions have been shown to behave as proper names (cf. Carlson 1977), so that a sentence like (6a) should have a logical form as (6b), where TIGER_k stands for the kind corresponding to the predicate **tiger**.

(6) a. The tiger will soon be extict.
b. **will-soon-be-extinct** (TIGER_k)

The relation between the kind and its predicate is expressed in (7), where **R** is the *realization relation* (c.f. Carlson 1977) with the exception that I follow Krifka *et al.* 1995 and do not consider stages. **R**(y,x) states that the object *y* belongs to the kind *x*, so that (7) can be paraphrased as claiming that the kind TIGER_k is the unique object such that if an object is a **tiger**, it is a realization of the kind TIGER_k. The meaning of the 'generic' definite article is the one stated in (8). The logical form of sentence (6a) can now be state all in terms of the predicate **tiger** (9).

(7) $\text{TIGER}_k = \text{the}_{\text{GENERIC}}$ (**tiger**)
$= \lambda Q\, \iota x\, \forall y[Q(y) \leftrightarrow \mathbf{R}(y,x)]$ (**tiger**))
$= \iota x\, \forall y[\mathbf{tiger}(y) \leftrightarrow \mathbf{R}(y,x)]$

(8) $\text{the}_{\text{GENERIC}} = \lambda Q\, \iota x\, \forall y[Q(y) \leftrightarrow \mathbf{R}(y,x)]$

(9) **will-soon-be-extinct** ($\iota x\, \forall y[\mathbf{tiger}(y) \leftrightarrow \mathbf{R}(y,x)]$)

When applying this idea to Brazilian Portuguese, attention must be paid to the denotation proposed for common nouns and to the existence of a singular and a plural operator. Sentence (10a) would be compositionally derived as in (10b). Correspondingly, a sentence with the plural definite generic would be as in (11b).

(10) a. O mico-leão-dourado logo estará extinto.
The monkey-lion-golden soon will-be extinct

b. **will-soon-be-extinct** (the$_{GENERIC}$ (SING(**monkey-lion-golden**)))
= **will-soon-be-extinct** (the$_{GENERIC}$ λx(**monkey-lion-golden**(x) ∧ **At**(x)))
= **will-soon-be-extinct** (λQ ιx ∀y[Q(y) ↔ **R**(y,x)] (λx(**monkey-lion-golden**(x) ∧ **At**(x))))
= **will-soon-be-extinct** (ιx ∀y [λx(**monkey-lion-golden**(x) ∧ **At**(x)) (y) ↔ **R**(y,x)])
= **will-soon-be-extinct** (ιx ∀y [(**monkey-lion-golden**(y) ∧ **At**(y)) ↔ **R**(y,x)])

(11) a. Os micos-leões-dourados logo estarão extintos.
TheS monkeyS-lionS-goldenS soon will-be extict

b. **will-soon-be-extinct** (the$_{GENERIC}$ (PL(**monkey-lion-golden**)))
= **will-soon-be-extinct** (ιx ∀y [(**monkey-lion-golden**(y) ∧ ¬**At**(y)) ↔ **R**(y,x)])

An apparent problem is that sentence (11) would come out true (in some future world) if there were just one 'monkey-lion-golden' in that world. Though I would not be so eager as to claim that this is the right result, one must admit that it would also be hard to say that the sentence is false in such a situation. It is interesting to note that this very fact could help us explain why (12a) is not a good sentence. Its logical form in (12b) claims that the kind that Graham Bell invented is never realized as a singular entity and that does not fit our knowledge of the world.

(12) a. Graham Bell inventou os telefones.
Graham Bell invented the telephones

b. **invented** (GB, ιx ∀y [(**telephone**(y) ∧ ¬**At**(y)) ↔ **R**(y,x)])

Sentences with a kind-referring subject and object-level predicates, that is, characterizing sentences with kind-referring expressions like (13a) yield a logical form as in (13b). And stage-level predicates yield logical forms as in (14b).[18]

(13) a. O brasileiro dança bem.
The Brazilian dances well

b. **GEN** [s,x;] (x = ιx ∀y [(**Brazilian**(y) ∧ **At**(y)) ↔ **R**(y,x))] ∧ s **is a normal situation with respect to dancing** ∧ s **contains** x; x **dances-well in** s)

(14) a. O brasileiro está fumando muito.
The Brazilian is smoking a-lot

b. **is-smoking-a-lot** (ιx ∀y [(**Brazilian**(y) ∧ **At**(y)) ↔ **R**(y,x)])

Our logical forms in (13b) and (14b) have object-level and stage-level predicates apply directly to kinds and not to individuals which does not express one of the possible

[18] For simplicity, I am not taking times into account in the logical forms of episodic sentences.

readings for these sentences. The solution to this problem, as proposed in Krifka *et al.* 1995, is based on the intuition that "a kind is in some way 'identical' with the objects, or with collections of objects, that belong to it." The authors propose the "somewhat unusual notion of identity" - the relation **IS/ARE** in (15). Its definition says that if x **IS** y, it is either identical to it or it is a realization of y, in which case y is a kind.

(15) **IS** $(x,y) \leftrightarrow (x = y \vee \mathbf{R}(x,y)$

With use of the **IS** relation, the logical form for sentence (16a) can be written as (16b). Since the **IS** relation has two possible interpretations, (16b) can be interpreted either as (i) or (ii). The first one is similar to the logical form of the same sentence with the indefinite generic as in (17). And the second one is equivalent to (13b) above. This result is interesting because it explains the near synomimy of sentences (16a) and (17a).

(16) a. O brasileiro dança bem.
The Brazilian dances well
'Brazilians dance well'

b. **GEN** [x,s;] (**IS** (x, BRAZILIAN$_k$) $\wedge$ s **is a normal situation with respect to dancing** $\wedge$ s **contains** x; x **dances-well-in** s)

(i) = **GEN** [x,s;] (**R**(x, BRAZILIAN$_k$) $\wedge$ s **is a normal situation with respect to dancing** $\wedge$ s **contains** x; x **dances-well-in** s)

(ii) **GEN** [x,s;] (x = BRAZILIAN$_k$ $\wedge$ s **is a normal situation with respect to dancing** $\wedge$ s **contains** x; x **dances-well-in** s)

(17) a. A Brazilian dances well ('A Brazilian dances well')
b. **GEN** [x,s;] (x **is a Brazilian,** s **is a normal situation with respect to dancing** $\wedge$ s **contains** x; x **dances-well-in** x)

The episodic sentence (14a) is also ambiguous between having its predicate apply directly to the kind or to its realizations.

5. Summary

The expression of genericity in Brazilian Portuguese, as in many other languages, makes use of two different devices: generically quantified sentences and kind-referring expressions. Generic indefinites in BP - the indefinite generic, the bare singular and the bare plurals - are just 'normal' indefinites participating on generic quantified sentences. Their genericity stems from the fact that they have their variables bound by the generic operator.

Definite generics, on the other hand, are kind-referring expressions in BP. They are capable of directly denoting kinds. Their interpretation is constructed by the application of the denotation of a generic definite article to the denotation of a singular or a plural

common noun. This generic article selects the singular entity which is a kind and which is related to its individuals by a realization relation.

The differences in interpretation among all types of nominals that may express genericity are obtained by considering common nouns as unspecified for number in BP. Their denotation includes both singular and plural individuals. The differences stem from the existence of both a SING(ular) and a PL(ural) operator and from the fact the different semantics of between indefinite generic and definite generic nominals.

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